

Applicants: Howard et al.
Serial No.: 09/067,208
Page 2

IN THE CLAIMS:

1. (currently amended) An electrode assembly for an electrochemical cell of the type comprising an elongated anode assembly and an elongated cathode assembly wound unidirectionally in side-by-side relation into a coil comprising a plurality of alternating anode and cathode assembly layers built up from an innermost layer through inner layers to an outermost layer such that the outermost layer of the coil comprises an end segment of one of the anode assembly or the cathode assembly wherein:

(a) the anode assembly comprises:

- (1) an anode comprising an elongated strip of an alkali metal and an anode current collector having at least a first connector tab disposed to extend away from a side edge thereof, the elongated strip of the alkali metal having a first length and the anode current collector having a second length, the second length of the anode current collector being shorter than the first length of the elongated strip of the alkali metal wherein the anode current collector mechanically bonded on a first side to the first length of the alkali metal and mechanically bonded on a second side to the second length of the alkali metal; and
- (2) a first layer of separator material shaped to form a pocket around the anode to encase the anode therein and through which the first connector tab extends; and

(b) the cathode assembly comprises:

- (1) a cathode comprising an elongated cathode current collector having a second connector tab disposed to extend away from a side edge thereof, the cathode current collector having a third length, and a cathode material bonded to the cathode current collector; and
- (2) a second layer of separator material shaped to form a pocket

Applicants: Howard et al.
Serial No.: 09/067,208
Page 3

around the cathode to encase the cathode therein and through which the first connector tab extends, whereby two layers of separator material separate the anode and cathode when wound into the coil of the electrode assembly.

2. (canceled)
3. (presently amended) The electrode assembly of claim 1, wherein the anode current collector is formed from at least a one of: material selected from the group consisting of a titanium material, a nickel material, a copper material and an alloys thereof at least a one of the foregoing materials.
4. (presently amended) The electrode assembly of claim 1, wherein the cathode current collector further comprises formed of a titanium element.
5. (presently amended) The electrode assembly of claim 1, wherein the cathode material further comprises at least a one of: a solid reactive material, a binder material and a conductivity enhancer.
6. (presently amended) The electrode assembly of claim 5, wherein the solid reactive material comprises a silver vanadium oxide material.
7. (presently amended) The electrode assembly of claim 5, wherein the binder material further comprises a PTFE material.
8. (presently amended) The electrode assembly of claim 5, wherein the conductivity enhancer further comprises a conductive carbon.
9. (canceled)

Applicants: Howard et al.
Serial No.: 09/067,208
Page 4

10. (presently amended) An electrode assembly for an electrochemical cell of the type comprising an elongated anode assembly and an elongated cathode assembly wound unidirectionally in side-by-side relation into a coil comprising a plurality of alternating anode and cathode assembly layers built up from an innermost layer through inner layers to an outermost layer such that outermost layer of the coil comprises an end segment of the anode assembly, wherein.

(a) the anode assembly comprises:

- (1) an anode comprising an elongated strip of an alkali metal and an anode current collector having at least a first connector tab disposed to extend away from a side edge thereof, the elongated strip of the alkali metal having a first length, the anode current collector having a second length shorter than the first length, the anode current collector being disposed against an end segment of the elongated strip of the alkali metal corresponding to an end segment of the anode assembly ~~that when wound into the coil disposes at least a portion of the anode current collector in the outermost layer of the coil wherein the anode current collector is mechanically bonded on a first side to the first length of the alkali metal and mechanically bonded on a second side to the second length of the alkali metal~~; and
- (2) a first layer of separator material shaped to form a pocket around the anode to encase the anode therein and through which the first connector tab extends; and

(b) the cathode assembly comprises:

- (1) a cathode comprising an elongated cathode current collector having a second connector tab disposed to extend away from a side edge thereof, the cathode current collector having a third length, the third length shorter than the first length by an amount that enables the end segment of the

Applicants: Howard et al.
Serial No.: 09/067,208
Page 5

anode assembly to be wound into the outermost layer of the coil, and a cathode material bonded to the cathode current collector; and

(2) a second layer of separator material shaped to form a pocket around the cathode to encase the cathode therein and through which the first connector tab extends, whereby two layers of separator material separate the anode and cathode when wound into the coil of the electrode assembly.

11. (canceled)

12. (presently amended) The electrode assembly of claim 10, wherein the anode current collector is formed from a material selected from the group consisting of titanium, nickel, copper and alloys thereof.

13. (presently amended) The electrode assembly of claim 10, wherein the cathode current collector further comprises formed of a titanium element.

14. (presently amended) The electrode assembly of claim 10, wherein the cathode material further comprises at least one of: a solid reactive material, a binder material and a conductivity enhancer.

15. (presently amended) The electrode assembly of claim 14, wherein the solid reactive material further comprises a silver vanadium oxide.

16. (presently amended) The electrode assembly of claim 14, wherein the binder material further comprises a PTFE material.

17. (presently amended) The electrode assembly of claim 14, wherein the conductivity enhancer further comprises a conductive carbon.

Applicants: Howard et al.
Serial No.: 09/067,208
Page 6

18.-94. (canceled)

95. (presently amended) The electrode assembly of claim 10, wherein:
the first layer of separator material forming a pocket around the anode is
formed by folding a separator material sheet over a top edge of the
anode, conforming the separator material sheet to the anode, and
joining the separator material sheet to itself with a seal at a bottom
edge of the anode; and
wherein the second layer of separator material formsing a pocket around
the cathode is formed by a folded portioning of a sheet of separator
material sheet over a top edge of the cathode, said folded portion
conforming the sheet of separator material sheetto the cathode,
and joining the sheet of separator material sheetto itself with a seal
at a bottom edge of the cathode.

96. (original) The electrode assembly of claim 10, wherein:
the anode current collector extends through the end segment of the
elongated strip of alkali metal corresponding to an end segment of the
anode assembly that when wound into the coil disposes at least a portion
of the anode current collector in the outermost layer of the coil and
through at least one inner anode assembly layer of the coil not constituting
the innermost layer.

97.-101. (canceled)

102. (new) An electrode assembly for an electrochemical cell comprising:
(a) an anode including an elongated strip of alkali metal and a connector
tab in electrical contact with the alkali metal on an edge thereof;
(b) a cathode assembly comprising:

Applicants: Howard et al.
Serial No.: 09/067,208
Page 7

- (1) a cathode current collector having on an edge thereof a connector tab; and
- (2) a cathode material bonded at a uniform density of reactive material to the current collector;

and further comprising at least a single layer of a dielectric separator material disposed between the anode and the cathode assembly wherein said anode, said separator material and said anode are configured as an elongated, unidirectional winding with two substantially major straight sides, the winding including (a) at the innermost portion thereof a portion of the anode folded over the end of the cathode assembly such that it is disposed along both sides of the cathode assembly, the folded over portion establishing the length of the straight sides of the winding; and (b) at the outermost portion thereof, the anode wrapped around the cathode assembly.

103. (new) An electrode assembly according to claim 102, further comprising an anode current collector bonded on a first side to a length of alkali metal having a uniform thickness and bonded on a second side to a second length of alkali metal having a uniform thickness.